STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

MEMORANDUM

TO: Board of Environmental Protection

FROM: Deb Avalone-King, Bureau of Air Quality

DATE: March 18, 2010

RE: Request to Adopt: Chapter 161 Graphic Arts – Lithography and Letterpress Printing

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Statutory and Regulatory Reference:

A. Statutory authority.

38 MRSA Section 585-A provides that the Board of Environmental Protection "may establish and amend regulations to implement ambient air quality standards and emission standards. These regulations shall be designed to achieve and maintain ambient air quality standards and emission standards within any region and prevent air pollution."

B. Specific legal mandates requiring adoption.

Section 184 of the Clean Air Act requires states to implement or update reasonably available control technology (RACT) controls on all major VOC and NOx emission sources and on source categories covered by a Control Technique Guideline (CTG) document. EPA defines RACT as the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. In September 2006, EPA published a CTG for offset lithography printing operations which recommended specific limits for chemicals and processes used in these operations.

Location/Applicability:

The proposed regulation will apply statewide.

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AUGUSTA, MAINE 04333-0017
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RAY BLDG., HOSPITAL ST.

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BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
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1235 CENTRAL DRIVE, SKYWAY PARK
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Description:

Background: Many inks, fountain and cleaning solutions used in graphic arts contain volatile organic compounds (VOC), which are precursors to ground-level ozone formation. This regulation restricts the VOC emissions from offset lithography and letterpress printing operations. Under Section 184 of the Clean Air Act Amendments of 1990, the State must submit plans to control VOC emissions from all sources covered by a Control Technique Guideline (CTG) issued by US EPA.

This regulation requires all sources within this category to determine their emission levels and implement reasonable options for keeping such emissions at a minimum, in a cost effective way that includes: control technology approaches, VOC and composite vapor pressure limits and standards for work practices. The rule provides a variety of approaches for managing VOC emissions and complying with the limits stipulated in the rule with flexibility for sources to implement the limits in the manner that is most suitable for their facility.

Environmental Issues:

Volatile organic compounds contribute to ground-level ozone formation or smog which aggravates respiratory ailments such as asthma, bronchitis, and emphysema. The presence of ozone impedes the breathing of even healthy people and exacerbates existing respiratory and heart health conditions. Epidemiologic studies show that long-term exposure to ozone causes premature aging of the lungs and decreases in lung capacity and function. Though children, the elderly and those with heart disease or respiratory problems like asthma and emphysema are at particular risk, about 20 percent of otherwise healthy adults are unusually sensitive to ozone's effects, experiencing symptoms like coughing, wheezing and pain when they breathe deeply in highly polluted areas.

Significant Changes Were Addressed in Second Opportunity to Comment period:

A number of comments were received as a result of the first comment period that have been incorporated into Chapter 161 including: 1) a clarification of the applicability threshold and related recordkeeping requirements; and 2) inclusion of BACT related alternatives for compliance test methodology, recordkeeping requirements and oxidizer operating system parameters. At that point the Board directed the Department to repost the rule for a second comment period to allow an additional opportunity for public comment on those significant modifications.

Departmental Recommendation:

The Bureau now seeks *approval* of the proposed new regulation, Chapter 161; with amendments as outlined in the Final Rule and Supplemental Basis Statement.

Estimated Time of Presentation:

20 minutes

SUPPLEMENTAL BASIS STATEMENT
Chapter 161 Graphic Arts – Lithography and Letterpress Printing
March 18, 2010

COMMENTORS:

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(3) Steve Whipple Environmental Consultant for
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1) **Comment on Applicability Section 1.B: EPA recommends that for sheet-fed and coldset printing operations Maine use the EPA/industry agreed upon applicability threshold of:** 64 gallons per month or equivalently, 768 gallons per year of fountain solution, fountain solution additives and cleaning solution purchased or used. Likewise, for heatset printing operations we recommend that Maine use the EPA/Industry agreed upon applicability weight threshold of 450 pounds per month, or equivalently, 5400 pounds per year of ink, cleaning solution, fountain solution and fountain solution additives purchased or used. (Commentor #1)

Response: The suggested changes in the applicability threshold have been incorporated in Section 1B.

2) **Comment on Applicability Section 1B and Record-keeping 5A(7): The proposed Chapter 161 rule does not clearly state the record-keeping requirements for facilities that are exempt from the control requirements of the rule due to not meeting the applicability threshold listed in section 1.B.** *Exempted facilities should keep monthly records*, for a specified period of time, documenting the quantities of cleaning solution, fountain solution, fountain solution additives, and ink used to demonstrate that they fall below the applicability thresholds in section 1.B. (Commentor #1)

Response: The suggested change for recordkeeping by exempt facilities has been incorporated as follows.

New language:

1B. This regulation applies to any Offset Lithography (Heatset, Sheet Fed or Coldset) and Letterpress printing operation

(1) whose maximum actual emissions are greater than three tons of VOCs per rolling 12 month period;

(2) for non-heatset printing operations, whose total volume of cleaning solution, alcohol fountain solution, alcohol substitutes, coatings and ink purchased or used in any 30 day rolling period is greater than 64 gallons per month, or equivalently, 768 gallons in any 12 month rolling period; or

(3) for heatset printing operations whose total weight of heatset inks, cleaning solution, fountain solution and fountain solution additives purchased or used in any 30 day rolling period is greater than 450 pounds per month, or equivalently, 5400 pounds per 12 month rolling period.

Any person claiming exemption pursuant to this subsection shall record and maintain monthly operational records sufficient to demonstrate compliance as specified in Subsection 5A(7) of this Chapter.

5A(7) Exempted printing operations shall maintain monthly purchase records and Material Safety Data Sheets (MSDS) for each process chemical, as used to comply with the Occupational Safety and Health Administration's Hazard Communication Standard, 29 CFR 1910.1200. The records shall document the quantities and VOC content of cleaning solution, fountain solution alcohol, fountain solution alcohol substitutes, coatings, and ink used, to demonstrate that the printing operation falls below the applicability thresholds in section 1B, or as specified in a BACT analysis included in an air emission license. The records shall be maintained onsite for six years.

3) **Comment on Applicability Section 1C: Dingley Press is the only Maine facility, currently issued an air emission license and is subject to more stringent BACT requirements. In their current license mandated testing schedule they are not required to test again until December 31, 2011.** Practically, Dingley has met all the substantive conditions of the rule but has not incorporated some of the details such as documenting negative pressure in the dryer and would like to incorporate this is the next regularly scheduled test event which will take place in the fall of 2011. We suggest an amendment to Section 1C to accommodate that currently planned testing schedule. (Commentor #3)

Response: This change was incorporated into the rule as shown below. The air emission license specifies the ongoing testing time frame for this facility and provides an adequate means to address this concern.

1C. Any owner or operator of an offset lithographic or letterpress printing operation, who is subject to this Chapter, must demonstrate compliance by 12 months from the effective date of this Chapter. For a source that commences operation after the effective date of this Chapter, the owner or operator must determine compliance status by 12 months after the date on which the source commences operation. Any owner or operator of an offset lithographic or letterpress printing operation, who is subject to this Chapter and has a BACT analysis included in an air emission license must demonstrate compliance pursuant to their air emission license conditions.

4) **Comment on Applicability Section 1D: Section 1D should be reworded as follows in order to stay consistent with the definitions provided in Section 2 of this rule:**

1 D. Any facility that becomes or is currently subject to these provisions because its emissions, before controls, equal or exceeds 3 tons per rolling twelve month period or, greater than 768 gallons of cleaning solutions, alcohol fountain solution, alcohol substitutes and heatset ink purchased or use per 12 month rolling period, will remain subject to the provisions for three years after the emissions fall below and remain below the 3 tons per year applicability threshold. (Commentor #2)

Response: Per AG recommendations, the language has been changed for clarification purposes as shown below. The three tons of VOC emissions is equivalent to the product thresholds that were identified in 1B. Those equivalent product thresholds approved by EPA were included in 1B to simplify the recordkeeping process for small printing operations.

1D. Any printing operation that is subject to this Chapter due solely to exceeding the applicability threshold of three tons of VOC emissions per year in subsection 1B, and whose VOC emissions subsequently fall below that applicability threshold for a rolling 12 month period will remain subject to the requirements of this Chapter for three years following the conclusion of that 12 month rolling period. The printing operation will become subject to this Chapter anew upon exceeding any applicability threshold set forth in subsection 1B.

5) **Comments on Definitions Section 2 E and F, and Emission Control Limits Section 3B(4): There are some differences in the way the control device requirements in this new rule conflict with procedures currently in place as BACT license requirements for the Dingley Press facility.** (Commentor #3)

Response: The following definitions and modifications to allow for optional BACT/CAM protocol were added to the rule in Sections 2 and 3B(4):

2E. BACT. "BACT" means Best Available Control Technology as defined in *Definitions Regulation* 06-096 CMR 100 (last amended December 24, 2005).

2F. CAM. "CAM" means Compliance Assurance Monitoring as described in 40 CFR Part 64.

3B (4) An owner or operator of a heatset lithographic or heatset letter press printing press and dryer(s) equipped with a control system shall maintain the dryer air pressure lower than the pressroom air pressure at all times the press is operating; and ensure that :

(a) The capture system and control device are operated at all times that the printing press is in operation; and the manufacturer's minimum recommended operating temperature for the control device or licensed limit or as otherwise specified in a BACT or CAM analysis included in a license issued after 1997 shall be maintained whenever the presses are in operation, and

(b) The control device is equipped with the applicable monitoring equipment specified in Section 4 Compliance Test methods, and the monitoring equipment is installed, calibrated, operated, and maintained according to the manufacturer's specifications or as otherwise specified in a BACT or CAM analysis included in a license issued after 1997 at all times the control device is in use.

6) **Comment on Emission Control Limits Section 3A(4): This suggested language may help adjust limits to accommodate scalable need of small verses larger facilities:**

Section 3A(4). Cleaning Solution Limits: For non - press or press parts cleaning processes, a facility is allowed to use a maximum 110 gallons of higher VOC content cleaning solvents for each press line at the facility within any consecutive twelve month period. (Commentor #3)

Response: This change was not incorporated into the rule because it would alter the applicability threshold beyond the levels that are specified by the EPA CTG limits.

7) **Comment on Compliance Test Methods Section 4A(3)(e): Dingley requests some modifications to the control system testing requirements in this rule.** (Commentor #3)

a) Pursuant to the Dingley Press 1997 BACT/CAM analysis and EPA method 25 and 25A, stack testing protocol has previously allowed for modification of probe temperature to prevent condensation and the risk of fire damage. Dingley Press very often uses Method 18 testing to determine methane (exempt VOC) concentration and subtract this from the VOC measurement.

b) The testers typically heat the lines to about 320 degrees F but the requirement to at least match the flue gas temperature may be challenging. Functionally APCC and DEP stack testers have worked this out. APCC uses very hot (350+) sample lines to minimize/eliminate condensation to ensure accurate results. This is all disclosed in the stack testing protocol reviewed and approved by DEP on a case by case basis.

Response: To maintain as much flexibility as possible for other facility; the AG has recommended the following changes in order to ensure the process meets license and EPA requirements, yet prevents fire damage concerns.

4A(3)(e)

(iii) US EPA Method 25 specifies a minimum probe temperature of two hundred sixty-five degrees Fahrenheit. The probe shall be heated to at least the temperature required to prevent condensation as specified in the stack test protocol required by the governing air emission license, or otherwise approved in writing by the Department and EPA.

(iv) US EPA Method 25A specifies a minimum temperature of two hundred twenty degrees Fahrenheit for the sampling components leading to the analyzer. The sampling components and flame ionization detector block shall be heated to at least the temperature required to prevent condensation as specified in the stack test protocol required by the governing air emission license, or otherwise approved in writing by the Department and EPA.

8) **Comments on Section 5A Recordkeeping:**

a) Dingley Press is concerned about the added expense of operating the thermal oxidizers and its catalytic oxidizer with the new 3-hr temperature averaging requirements specified in this draft rule. The facility's license requirements currently allow recording and downloading data every few seconds with no averaging requirements. To meet the new requirements would require Dingley to purchase and implement a new and expensive software program that would

calculate the averaging times. In addition, their existing protocol shuts the system down as soon as temperature limits are exceeded; it is therefore more protective of air quality. (Commentor #3)

b) The temperature parameters specified in the rule are atypical for the current operating system and are not appropriate for use as the required system shutdown threshold. This is tricky because Dingleys RTOs (thermal oxidizers) were each required by BACT after 1997 and some of the monitoring conditions have been amended over the years by Chapter 115 and 140 licensing actions including CAM. We believe that for minor modifications it is possible that DEP issue BACT conditions without EPA review/approval. (Commentor #3)

c) In addition, Dingley is currently making changes to its control configuration and may not use its catalytic oxidizer much, if at all, over the next few years. We request DEP add an alternative testing timeframe for this system based on usage. (Commentor #3)

Response: Dingley Press is subject to BACT, a more stringent level of air emission control. The BACT analysis and air emission license protocol currently in place for this facility are more protective of air quality than RACT requirements specified in Chapter 161 and have, therefore, been incorporated into the rule to accommodate these concerns. A recordkeeping protocol based on oxidizer system usage is a reasonable and cost effective strategy and has been incorporated into the rule and additional clarification in the form of a note was added to reduce confusion for facilities that operate both types of systems.

5A1b

(ii) For thermal oxidizers, for each day of operation of the press:
A log or record using a shorter averaging period approved in writing by the Commissioner and EPA, and as applicable, documenting any shutdowns triggered by an oxidizer shutdown threshold temperature as otherwise specified in a BACT analysis or CAM requirement included in an air emissions license after 1997; and

5A1(c)

(ii) For catalytic oxidizers, for each day of operation of the press:
A log or record using a shorter averaging period approved in writing by the Commissioner and EPA, and as applicable, documenting any shutdowns triggered by an oxidizer shutdown threshold temperature as otherwise specified in a BACT Analysis or CAM requirement included in an air emissions license after 1997; and

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Note: For thermal oxidizers, an owner or operator must comply with either subsection (1)(b)(i) or (1)(b)(ii), but must also comply with subsection (1)(b)(iii).

For catalytic oxidizers, an owner or operator must comply with either subsection (1)(c)(i) or (1)(c)(ii), but must also comply with subsection (1)(c)(iii).

5A(1)(d) For catalytic oxidizers, the catalyst bed material shall be inspected annually, for years in which the unit is operated for at least 1000 hours, for general catalyst condition and any signs of potential catalyst depletion. The owner or operator shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or poor catalyst condition

based on manufacturer's recommendations, but not less than once every five years, regardless of usage.

9) **Comment on the Recordkeeping Section 5A(2)(a): The correct reference in Section 5A(2)(a) should be 4B(4) of the rule instead of the previously numbered 3 B(4).** (Commentor #2)

Response: The suggested correction has been incorporated.

10) **Comment on Recordkeeping, paragraph 5A(4) – The terminology "non-heatset web offset" was removed from paragraph 5A(4) in order to capture the recordkeeping of any type of lithographic press that does not use a recipe log or that alters a batch of fountain solution.** If the Department prefers to keep a separate paragraph for non-heatset web offset lithographic printing, item (b) should be removed because alcohol is not allowed in fountain solutions for non-heatset web offset lithographic printing. A separate paragraph for heatset web or sheet-fed offset lithographic printing presses should include items (a) through (e) as written since alcohol is allowed in the fountain solutions for these types of presses. (Commentor #3)

Response: The suggested terminology has been clarified to cover both alcohol and alcohol substitute processes yet avoid further redundancy in the rule as follows.

5A

(4) The owner or operator of a subject ~~non-heatset web offset~~ lithographic printing press not maintaining a recipe log in accordance with Section 5 A(3) above, shall maintain records for each batch of fountain solution prepared for use in the press, including:

(a) The volume and VOC content of any concentrated alcohol substitute, added to make a batch of fountain solution, based upon the manufacturer's laboratory analysis using US EPA Method 24.

(b) The volume of any alcohol added to make each batch of fountain solution.